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OWENS CORNING LINNTON
CSM Site Summary

OWENS CORNING LINNTON

Oregon DEQ ECSI #: 1036

Address: 11444 NW St. Helens Rd./11910 NW St. Helens Rd
DEQ Site Manager: Tom Gainer
Latitude: 45.6069°
Longitude: 122.7900°
Township/Range/Section: 2N/1W/34

River Mile: 3.8 West bank

LWG Member ☐ Yes ☒ No

Upland Analytical Data Status: ☐ Electronic Data Available ☒ Hardcopies only

1. SUMMARY OF POTENTIAL CONTAMINANT TRANSPORT PATHWAYS TO THE RIVER

The current understanding of the transport mechanism of contaminants from the uplands portions of the Owens Corning Linnton site to the river is summarized in this section and Table 1, and supported in following sections.

1.1. Overland Transport

Although contaminants are present in surface soils, Kennedy/Jenks Consultants (KJC) (2002) concluded that stormwater runoff and soil erosion were not complete pathways for contaminants to migrate to the river. Stormwater from the southern portion of the site is uncontrolled, but most of this area is vegetated and not paved and so most stormwater likely infiltrates into the soil. DEQ has recommended that the site be maintained to manage surface runoff and prevent PAHs in surface soil from migrating to the river (Palochka 2002, pers. comm.).

1.2. Riverbank Erosion

The bank along the northern portion of the site is overgrown with vegetation and has rock along the shoreline. The bank on the southern portion of the site does not have rock protection and is more steeply eroded. No evidence of surface water channeling was observed on either the northern or southern banks during a significant storm event in 2001. DEQ has recommended that the bank be maintained to manage surface runoff and prevent PAHs in surface soil from migrating to the river (Palochka 2002, pers. comm.). In 2002, Owens Corning implemented riverbank improvements to prevent transport of surface soil to the river. The bank is monitored for signs of erosion or indications of storm water drainage to the river.

1.3. Groundwater

Based on the results from the Expanded Preliminary Assessment (KJC 2000) and information from the DEQ project manager for the site (Gainer 2004, pers. comm.), impacted groundwater at the site is not significant and does not appear to be a current or ongoing source of Willamette River water or sediment contamination.

1.4. Direct Discharge (Overwater Activities and Stormwater/Wastewater Systems)

Stormwater from the northern portion of the site is collected in a combined stormwater/wastewater collection system that discharges to the Willamette River via a private outfall. Most stormwater passes through an oil/water separator prior to discharge. DEQ (1999) reported that there have been several periods of minor non-compliance with discharge standards that have not likely adversely affected sediment quality in the Willamette River.

Historic vessel and product transfer activities at the existing and former docks could have resulted in releases to the river; however, there is no record of historic spills in these areas.

1.5. Relationship of Upland Sources to River Sediments

See Final CSM Update.

1.6. Sediment Transport

The Owens Corning - Linnton site is located on the west river bank at and downstream of RM 4. This portion of the river was characterized in the Portland Harbor Work Plan (Integral et al. 2004) as transitional between the upstream transport zone (RM 5-7) and the downstream depositional zone (RM 1-3). The Sediment Trend Analysis® results indicate that the channel environment off of this site is a mixture of dynamic equilibrium and episodic net accretion and erosion. Time-series bathymetric change data over the 25-month period from January 2002 through February 2004 (Integral and DEA in prep.) reveal areas of sediment accumulation up to 1 ft around the site's T-dock and along the toe of the bank slope along the -20 ft NAVD88 contour. Areas inshore of the –10 ft NAVD88 contour show either no change or net erosion up to about 1 ft. The main channel offshore of the site is dominated by areas of no measurable riverbed elevation change.

2. CSM SITE SUMMARY REVISIONS

Date of Last Revision: March 4, 2005

3. PROJECT STATUS

Primary Source: DEQ (2004). In 1991, the southern area of the site was evaluated and cleaned up and received *No Further Action* status from DEQ, but was re-evaluated as part of the XPA.

Activity		Date(s)/Comments
PA/XPA	☒	XPA completed 2002
RI	☐	
FS	☐	
Interim Action/Source Control	☐	
ROD	☐	
RD/RA	☐	
NFA	☐	1991 – southern part only

DEQ Portland Harbor Site Ranking (Tier 1, 2, 3, or Not ranked): Tier 2

4. SITE OWNER HISTORY

Sources: Multnomah County Taxation records, Polk City of Portland directories, Sanborn fire insurance maps, USACE Port Series reports, KJC 2000, and DEQ 1999.

Owner/Occupant	Type of Operation	Years
Entire Site		
Owens Corning Corp. - **owner/operator**	Asphalt product production	1981 - present
Medford Corp. - **owner**	Woodchip exporter (never operated on site)	1972 – 1981
Southern Portion		
G.H. McCulloch, Inc. - **operator** (location unconfirmed)	General contractor (equipment storage)	1978 - 1990
Linnton Planing Mill - **operator**	Lumber mill, planning mill, veneer production for plywood manufacturer	1978 - 1990
Rivergate Timber Co. - **operator**	Pole (pier pilings) treating	1969 – 1971
Kingsley Lumber Co. - **owner/operator** (C.W. Kingsley listed as owner ~ 1944)	Sawmill and planning mill	Owner (? – 1971); Operator (1940 – late 1950s or early 1960s)
Beaver-Linnton Mills - **operator**	Unknown	1924 - ?
Oregon Ship Timber Mills - **operator**	Saw mill	1917 – 1934?
Northern Portion		
West Oregon Lumber Co. - **operator**	Lumber saw and planning mill with wood treating plant	~1917 – late 1950s or early 1960s
Willamette Box & Lumber Co. - **operator**	Lumber and box plant	1908 - ?
Uncertain Location		
Misco Services - **operator**	Industrial supply	1977 – 1985

5. PROPERTY DESCRIPTION

The site information summarized in this section was obtained from DEQ (1999) and KJC (2000). The 44-acre Owens Corning site is zoned for industrial use. The property can be divided into a northern, developed portion and a southern, undeveloped portion. An asphalt plant occupies the northern portion of the property. There are 11 aboveground storage tanks (ASTs) at the asphalt plant containing petroleum-based products. The total capacity of the ASTs is about 7.5 million gallons. There is an additional AST at the plant containing ferric chloride. An underground storage tank used to store gasoline was removed in 1990. All piping at the plant is above ground except the piping which passes under the roadway between the storage tanks and the processing equipment. These underground pipes have a secondary containment pipe. All manufacturing facilities and operations are located within bermed containment areas.

Support buildings at the plant include an office, laboratory, locker room, power center and boiler room, and maintenance and storage facilities. The parking and product storage areas are paved with asphalt. The site is mostly flat; approximately 100 ft from the river the crest of the bank slopes steeply down to the water.

Storm water on the northern, developed part of the site and process water are directed to an oil-water separator treatment before discharge to the Willamette River. The site facilities are not connected to the city sanitary sewer system. Sewage at the site is directed to an onsite septic tank and drain field.

The southern portion of the site is currently undeveloped and mostly vegetated. All buildings on this portion of the site have been demolished and removed with small amounts of rubble and asphalt pavement remaining.

Owens Corning leases a 2,500-ft^2 area (50 ft x 50 ft) of in-river state land to maintain a spill response boat house and access ramp [see Supplemental Figure Exhibit A (DSL 2000)].

6. CURRENT SITE USE

Current site use information was reported by KJC (2000) and DEQ (1999). Owens Corning currently manufactures asphalt products on the northern portion of the site. Products include various grades of asphalt and asphaltic mixtures for paving, residential and commercial roofing, and industrial use. In addition to petroleum products (e.g., hot asphalt and fuel oil), ferric chloride and sodium hydroxide are used and are stored in aboveground tanks and drums. The final bulk products are shipped via truck. The plant currently receives petroleum product by rail and tanker truck, and materials are pumped directly into tanks that are located in diked secondary containment areas.

The southern portion of the site is vacant. This part of the site is used to store asphalt shingles (which are produced elsewhere and packaged and wrapped in plastic) until final shipment.

7. SITE USE HISTORY

Information on past site use was reported by KJC (2000) in the XPA and DEQ (1999), and is summarized in this section.

Past operations on the site include various wood product operations (sawmill, planning mill, box plant), a wood treatment facility, a wholesale lumberyard, and an equipment yard for a construction firm. A former pole barn located on the southern portion of the site was reportedly used for storage of solvents, fuels and lubricants. The Medford Corporation constructed a wood chip-loading terminal at the site in the 1970s and early 1980s but it was apparently never used, although remnants remain on the site. A large dock on the southern portion of the property is observed in aerial photographs from 1938 through 1963, but is no longer present.

Owens Corning constructed the asphalt facility on the northern portion of the property as a terminal for raw asphalt material storage and loading in 1982. Ships delivered product to the existing dock on the northern part of the site on an approximate 35-day cycle between 1982 and 1987. There was one barge and one ship delivery in 1991. Asphalt manufacturing facilities were constructed at the site and began operation in 1993.

8. CURRENT AND HISTORIC SOURCES AND COPCS

The understanding of historic and current potential upland and overwater sources at the site is summarized in Table 1. The following sections provide a brief overview of the potential sources and COPCs at the site requiring additional discussion. Information on upland and overwater sources at the site was obtained from DEQ (1999) and KJC (2000). Site maps for the northern and southern portions of the site are provided in Supplemental Figures 3 and 4 from KJC (2000), respectively.

8.1. Uplands

Potential source areas associated with current operations are the asphalt transfer lines, tank storage area, and asphalt plant. However, all of these facilities have secondary containment systems, and KJC (2000) reports that there have been no uncontrolled releases from these systems.

Potential source areas associated with historical operations of the lumber mills include a former pole barn, wood treatment, and former UST areas in the southern portion of the site. The former UST was used to store gasoline. It has a capacity of 350 gallons and was removed in 1990. The XPA (KJC 2001, 2002) sampling investigations eliminated the former wood treatment and UST areas as potential upland sources to the river.

8.2. Overwater Activities

☒ Yes ☐ No

Historically, vessels delivered asphalt products to the site at the facility's dock from 1982 to 1987. With one exception (in 1991), overwater product transfer ceased in 1987. This dock remains on the site although it is no longer used. A former dock was located on the southern portion of the property. Although there are no recorded spills, vessel activity and product transfer are potential historic sources.

8.3. Spills

Known or documented spills at the Owens Corning Linnton site were obtained either from DEQ SPINS database for the period of 1995 to 2003, from oil and chemical spills recorded from 1982 to 1989 by the U.S. Coast Guard and the National Response Center's centralized federal database [see Appendix E of the Portland Harbor Work Plan (Integral et al. 2004)], or from DEQ correspondence. These spills are summarized below.

Date	Material(s) Released	Volume Spilled (gallons)	Spill Surface (gravel, asphalt, sewer)	Action Taken (yes/no)
5/17/02	runoff following fire and explosion at above ground asphalt storage tank	not reported	not reported	runoff contained, no release to surface water
3/25/2003	asphalt	800	soil	contained, some entered storm drain, no surface water affected

DEQ (1999) reported that, according to Owens Corning, "small asphalt and heavy hydrocarbon spills have been the only spills since the property was purchased in 1981." Small asphalt spills at the facility typically solidify at ambient temperature and are picked up and disposed of as solid waste or recycled (KJC 2000).

9. PHYSICAL SITE SETTING

The Expanded Preliminary Assessment report for the site (KJC 2000) includes a summary of the site-specific geology and hydrogeology information collected during prior investigations. Subsurface data collected prior to the KJC 2000 report focused on the southern portion of the site [see Supplemental Figure 4 from KJC (2000)]. Additional subsurface data were collected during subsequent XPA sampling phases, including from soil borings and shallow soil sampling completed in both the north and south portions of the site [see Supplemental Figure 1 from KJC (2001)]. This section relies on the summaries of geologic and hydrogeologic information provided by KJC (2000 and 2001).

9.1. Geology

Data collected from test pits and boring logs indicate that the stratigraphy at the site consists of recent fill overlying Quaternary alluvial deposits that in turn overlie the Columbia River Basalt Group. The fill material was identified as consisting mostly of sand with clay, silt, and gravel. The thickness of the fill ranges from 8 to at least 24 feet. The Quaternary alluvial deposits were identified as mostly silt and sand with sandy gravel observed below 70 feet bgs in the northern portion of the site. The top of the basalt ranged from 49 feet to more than 92 feet bgs and appears to slope downwards toward the northeast.

9.2. Hydrogeology

The depth to groundwater at the site was reported to be between 8 and 21 feet bgs in the six shallow monitoring wells at the site (KJC 2001). The shallow groundwater beneath the site was determined to flow northeast toward the Willamette River. Water level data were not available for the deeper water-bearing zone.

10. NATURE AND EXTENT (*Current Understanding*)

The current understanding of the nature and extent of contamination for the uplands portions of the site is summarized in this section. When no data exist for a specific medium, a notation is made.

10.1. Soil

10.1.1. Upland Soil Investigations ☒ Yes ☐ No

The initial data collection at the site was conducted in 1989 and was limited to the southern part of the site. Sampling locations are shown in Supplemental Figure 4 from KJC (2000). Samples from the former wood treatment area contained arsenic (10.6 to 46.2 mg/kg), chromium (13.0 to 21.3 mg/kg), copper (10.9 to 547 mg/kg), and pentachlorophenol (nondetected to 2,700 ug/kg). TPH was found in shallow soils in the vicinity of the pole barn area (82 to 28,000 mg/kg) and the former UST (1,696 and 2,165 mg/kg). Subsurface soil sampling was conducted in 1990 as part of monitoring well installation. PCP was undetected in soils from 2.5 and 7.5-foot depths intervals at MW-1A (at the former wood treatment area). No TPH and BTEX were detected in soils from the 5 and 10-foot depth intervals in monitoring well MW-2A, at the former location of the UST . In addition, analysis of samples from four test pits (1.5 and 4-foot depths) in the former wood treatment area did not detect pentachlorophenol or TPH. Petroleum-impacted soils in the vicinity of the former UST were removed in 1990. Subsequent sampling did not detect TPH or BTEX in this area.

Additional soil sampling was conducted in 2000 and 2001 as part of the XPA for the site (KJC 2001). Sampling locations are shown in Supplemental Figure 1 from KJC (2001); subsurface soil sampling results are discussed below and summarized in the following table. Of the subsurface soil samples obtained from four borings advanced in 2000, HPAHs were detected in subsurface samples at SB-4 and SB-1; LPAHs were also detected at SB-1. Arsenic was detected in subsurface soil samples at the 5 and 11-foot depth intervals at SB-3

	Subsurface Samples[a]	
Chemical	**Minimum**	**Maximum**
Arsenic (mg/kg)	17.3	20.4
TPH (mg/kg)	<20	<100
Total LPAH (ug/kg)	<13.4	32.3
Total HPAH (ug/kg)	<13.4	202.1
Pentachlorophenol (ug/kg)	not analyzed	

[a]Samples from various depth intervals ranging from 2.5 - 3 ft to 13.5 - 14 ft below ground surface.

10.1.2. Riverbank Samples ☒ Yes ☐ No

Near-surface soil samples were also collected as part of the XPA (KJC 2001, 2002). The initial samples were collected at four locations near or along the bank in February 2001 [Supplemental Figure 1 from KJC (2001)]. The locations were in areas observed to have the greatest potential for surface water runoff from the site to the river. Samples from SS-1 and SS-4 contained HPAH and LPAH. The SS-4 sample also contained TPH as heavy oil. Arsenic was detected only at location SS-3. SS-1 (active process area) and SS-4 (former pole barn area) were identified as the areas of potential concern and additional near-surface samples were collected to evaluate potential contaminant migration to the river (KJC

2002). Although some elevated concentrations were reported, DEQ (2004) concluded that contaminants were not reaching the river.

Results of both the February and October near-surface sample collection are summarized in the table below.

	Near-Surface[a]			
	Feb 2001 (KJC 2001)		Oct 2001 (KJC 2002)	
Chemical	**Minimum**	**Maximum**	**Minimum**	**Maximum**
Arsenic (mg/kg)	4.67 (1 sample)		not analyzed	
TPH (mg/kg)	<20	1,190	<20	803
Total LPAH (ug/kg)	<13.4	236	<13.4	2,450
Total HPAH (ug/kg)	130.7	3,414	319.1	8,459
Pentachlorophenol (ug/kg)	<33 (one sample)		not analyzed	

[a]0 - 6 inches depth

10.1.3. Summary

In the 2000 sampling, PAHs were detected in only two subsurface soil samples and KJC (2001) concluded that subsurface soils are not a source of contaminants to the river. There are areas of elevated petroleum constituents in surface soil, but DEQ determined that there is no complete pathway to the river via surface runoff (DEQ 2004).

10.2. Groundwater

10.2.1. Groundwater Investigations ☒ Yes ☐ No

Groundwater investigations focused on the southern portion of the property as early as 1989. Six monitoring wells have been completed at the site (KJC 2000). All of the monitoring wells penetrate the shallow water-bearing zone.

10.2.2. NAPL (Historic & Current) ☐ Yes ☒ No

Available records indicate no evidence of NAPL at the site.

10.2.3. Dissolved Contaminant Plumes ☒ Yes ☐ No

Petroleum was detected in groundwater samples collected along the southern boundary of the site. However, the impacted groundwater was believed to originate from the adjacent GATX (Kinder Morgan) site (DEQ 2004). Refer to the Kinder Morgan Liquids Terminal - Linnton Petroleum Terminal site summary (ECSI No. 1096) for information regarding this plume. During earlier groundwater sampling, copper and chromium were detected in unfiltered groundwater samples collected in the former wood treatment area at concentrations of 740 μg/L and 320 μg/L, respectively. During subsequent sampling, these metals were not detected in any of the monitoring wells.

Plume Characterization Status ☒ Complete ☐ Incomplete

According to the DEQ, impacted groundwater at the site has been characterized with regards to potential impacts to the Willamette River (Gainer 2004, pers. comm.).

Plume Extent

The petroleum plume along the southern property boundary (within the Owens Corning site) is not expected to extend to the Willamette River. Figure 2 shows the estimated extent of the petroleum plume at the site based on available data collected at the site.

Min/Max Detections (Current situation)

The following table summarizes minimum and maximum concentrations of constituents detected in groundwater at the site.

Analyte	Minimum Concentration μg/L	Maximum Concentration μg/L
Volatile Organic Compounds (VOCs)		
Benzene	ND	150
Toluene	ND	6
Total Xylenes	ND	180

Preferential Pathways

No preferential groundwater flow pathways were identified during the Preliminary Assessment and Expanded Preliminary Assessment or prior investigations.

Visual Seep Sample Data

☐ Yes ☒ No

No seeps have been identified at the site (GSI 2003).

Nearshore Porewater Data

A sample of porewater extracted from a surface sediment sample was obtained in prior sediment investigations to evaluate potential soluble fractions of contaminants detected in the sediments. The sample was not representative of potential groundwater pathway discharges. The data from the sediment porewater sample are summarized in Table 2.

Groundwater Plume Temporal Trend

Insufficient data are available to assess plume distributions over time.

10.2.4. Summary

Six shallow groundwater monitoring wells have been installed on the site. Petroleum was detected in groundwater along the southern boundary of the site; however, the impacted groundwater was believed to originate from the adjacent GATX (Kinder Morgan) site (DEQ 2004). Based on the results from the Expanded Preliminary Assessment (KJC 2000) and information from the DEQ project manager for the site (Gainer 2004, pers. comm.), groundwater impacts at the site are not significant and do not appear to be a current or ongoing source of Willamette River water or sediment contamination.

10.3. Surface Water

Stormwater from the undeveloped southern portion of the site is uncontrolled; most of this area is vegetated and not paved and so stormwater likely infiltrates into the soil.

10.3.1. Surface Water Investigation

☒ Yes ☐ No

Stormwater was sampled in 2001 at three locations [see Supplemental Figure 1 from KJC (2000)]. The results of this sampling are discussed in Section 10.3.3.

10.3.2. General or Individual Stormwater Permit [Current or Past] ☒ Yes ☐ No

KJC (2000) reports that the site has two private outfalls [see Supplemental Figure 3 from KJC (2000)], although three outfalls are shown in the city's outfall records (Figure 1). Wastewater and stormwater from the northern portion of the site drain to a combined stormwater/wastewater collection system that is processed through an oil/water separator and then discharges to the Willamette River at an outfall just south of the loading dock (Outfall No. 2 [see Supplemental Figure 3 from KJC (2000)]). KJC (2000) reported that stormwater upgradient of the site, including from the Highway 30 area, also discharges through this outfall. No information was located on Outfall No.1, although KJC [see Supplemental Figure 3 from KJC (2000)] indicates that the gate valve is locked and closed.

The facility has the following NPDES permit for stormwater:

Permit Type	File Number	Start Date	Outfalls	Parameters/Frequency
GEN13	65589	1986 or earlier	Outfall 2	Standard[1]

[1] Standard GEN13 permit requirements include flow and oil and grease. Total suspended solids, pH, copper, lead, zinc, ethanol and methyl-t-butyl ether (MTBE) may also be required.

Do other non-stormwater wastes discharge to the system? ☒ Yes ☐ No

Non-contact cooling water and boiler discharge are combined with stormwater prior to processing through an oil/water separator and subsequent discharge (see Section 10.3.5).

10.3.3. Stormwater Data ☒ Yes ☐ No

The XPA (KJC 2000) reported that runoff and stormwater from the northern area of the site have been monitored on a regular basis. DEQ (1999) reported that there have been several periods of minor non-compliance with discharge standards that have not likely adversely affected sediment quality in the Willamette River.

Stormwater was sampled in 2001at three locations, as shown in Supplemental Figure 1 from KJC (2000). LPAHs were detected in a sample from the facility's oil/water separator (SW-2). However, no other PAHs were detected in stormwater samples collected from other locations, including the discharge point to the river. Additional stormwater sampling at the oil/water separator did not detect PAHs.

10.3.4. Catch Basin Solids Data ☐ Yes ☒ No

10.3.5. Wastewater Permit ☒ Yes ☐ No

The facility has NPDES general permits for discharge of non-contact cooling water (GEN01) and boiler blowdown (GEN05). Wastewater discharges to a combined stormwater/wastewater collection system (see above).

Permit Type	File No.	Start Date	Outfalls	Volumes	Parameters/Frequency
GEN01	65589	1992	No. 2	unknown	flow, temp, pH, total residual chlorine
GEN05	65589	1992	No. 2	unknown	flow, temp, pH, TSS

10.3.6. Wastewater Data ☒ Yes ☐ No

The cooling water and boiler blowdown discharges are combined with stormwater. See Section 10.3.3.

10.3.7. Summary

Currently, stormwater and wastewater from the northern portion of the site are discharged to the river and monitored under NPDES general permits. DEQ (1999) reported that there have been several periods of minor non-compliance with discharge standards that have not likely adversely affected sediment quality in the Willamette River. Stormwater from the undeveloped southern portion of the site is uncontrolled; most of this area is vegetated and not paved and so stormwater likely infiltrates into the soil.

There is no information on potential historic discharges from the site.

10.4. Sediment

10.4.1. River Sediment Data ☒ Yes ☐ No

Sediment data were collected off of the Owens Corning Linnton site as part of the following investigations:

- Georgia Pacific Linnton Site Assessment (CH2M Hill 2000) (Survey WLCGPE00)
- EPA Site Inspection 1997 (Weston 1998) (Survey WR-WSI98)
- Lower Willamette Group Portland Harbor Remedial Investigation, Round 1 Sampling (Integral 2004) (Survey LWG01)

A total of 6 surface sediment samples and 1 subsurface sediment sample have been collected, although not all samples were analyzed for all compounds. In addition, one sediment porewater sample was collected in 1997 by Weston and analyzed for metals and organotins. Three stations are proposed for LWG Round 2 sampling. Existing and proposed station locations are shown in Figure 1.

The data from all three sampling investigations are summarized in Table 2. Chromium, copper, lead, nickel, and zinc were detected at all surface stations and in the subsurface sample. Arsenic, cadmium, mercury and silver were detected at over half of the stations. LPAHs, which were detected in six of the seven surface samples, ranged from <19 to 1,995 ug/kg; the subsurface sample was 23,720 µg/kg. HPAHs were also detected in all surface samples and ranged from 44.6 to 9,598 ug/kg; the subsurface sample was 45,580 µg/kg. Tributyltin was analyzed in one surface sample and detected at 81 ug/kg, but was undetected in porewater. Pesticides were analyzed in three surface samples: DDT isomers were the only pesticide detected with concentrations of 3.9 to 25 ug/kg. PCBs were detected in one of the three samples at 27 ug/kg (Aroclors 1254 and 1260). Other organic chemicals detected in two or more surface samples include phenol, 4-methylphenol, dibenzofuran, carbazole, and diesel.

10.4.2. Summary

See Final CSM Update.

11. CLEANUP HISTORY AND SOURCE CONTROL MEASURES

11.1. Soil Cleanup/Source Control

Soil cleanup and source control measures included removal and onsite treatment of 600 cubic yards of gasoline-contaminated soils associated with a former UST (August 1990).

11.2. Groundwater Cleanup/Source Control

No groundwater source controls have been conducted at the site.

11.3. Other

Bank improvements were implemented in 2002 to prevent surface soil from migrating to the river. Actions include landscaping and visual monitoring for signs of erosion, surface water pooling, storm water drainage, or sheens on the river. DEQ (Palochko 2002) determined that no other source control measures were necessary, but recommended that riverbank improvements be maintained to manage surface runoff to the river.

11.4. Potential for Recontamination from Upland Sources

See Final CSM Update.

12. BIBLIOGRAPHY / INFORMATION SOURCES

References cited:

CH2M Hill. 2000. Expanded Preliminary Assessment for the Linnton Site. Agency Review Draft. Prepared for Georgia-Pacific West, Inc. CH2M Hill, Portland, OR.

DEQ. 1999. DEQ Site Assessment Program Strategy Recommendation: Owens Corning Corp. Oregon Department of Environmental Quality, Portland, OR.

DEQ. 2004. DEQ Site Summary Report – Details for Site ID 1036. DEQ Environmental Cleanup Site (ECSI) Database. Accessed February 23, 2004. www.deq.state.or.us/wmc/ecsi/ecsidetail.asp?seqnbr=1036.

Gainer, Tom. 2004. Personal communication with Tom Gainer of the DEQ on June 21, 2004.

Integral. 2004. Round 1 Site Characterization Report. Prepared for Lower Willamette Group, Portland, OR. Integral Consulting, Inc., Olympia, WA.

Integral, Windward, Kennedy/Jenks, Anchor Environmental, and Groundwater Solutions. 2004. Portland Harbor RI/FS Programmatic Work Plan. Prepared for the Lower Willamette Group, Portland, OR. Integral Consulting, Inc., Olympia, WA.

Kennedy/Jenks. 2000. Expanded Preliminary Assessment Linnton Site, Portland, OR. Prepared for Owens Corning Corporation. Prepared by Kennedy/Jenks Consultants, Portland, OR.

Kennedy/Jenks. 2001. Expanded Preliminary Assessment Sampling Results, Linnton Site, Portland, OR. Prepared for Owens Corning Corporation. Prepared by Kennedy/Jenks Consultants, Portland, OR.

Kennedy/Jenks. 2002. Expanded Preliminary Assessment Additional Sampling Results, Linnton Site, Portland, OR. Prepared for Owens Corning Corporation. Prepared by Kennedy/Jenks Consultants, Portland, OR.

Palochko, D. Personal communication (letter of June 5, 2002 to T. Gainer, Oregon Department of Environmental Quality). Owens Corning, Toledo, OH.

SEA and DEA. 2003. Lower Willamette River May 2003 Multibeam Bathymetric Survey Report. Prepared for the Lower Willamette Group, Portland, OR. Striplin Environmental Associates, Inc., and David Evans Associates, Olympia, WA.

SECOR. 1999. Storm Water Pollution Control Plan. Prepared for Owens Corning Portland Roofing Plant, Portland, OR. Prepared by SECOR, Portland, OR.

Weston. 1998. Portland Harbor Sediment Investigation Report. Prepared for U.S. Environmental Protection Agency. Roy F. Weston, Inc., Portland, OR.

Other relevant references/information sources:

EDR. 2002. EDR Environmental Atlas, Portland Harbor, Multnomah. OR. Environmental Data Resources, Southport, CT.

Groundwater Solutions. 2003. Portland Harbor RI/FS: Upland Groundwater Data Review Report, River Mile 2-11, Lower Willamette River. Prepared for the Lower Willamette Group, Portland, OR. Groundwater Solutions, Inc., Portland, OR.

Figures:

Figure 1. Site Features
Figure 2. Extent of Impacted Groundwater

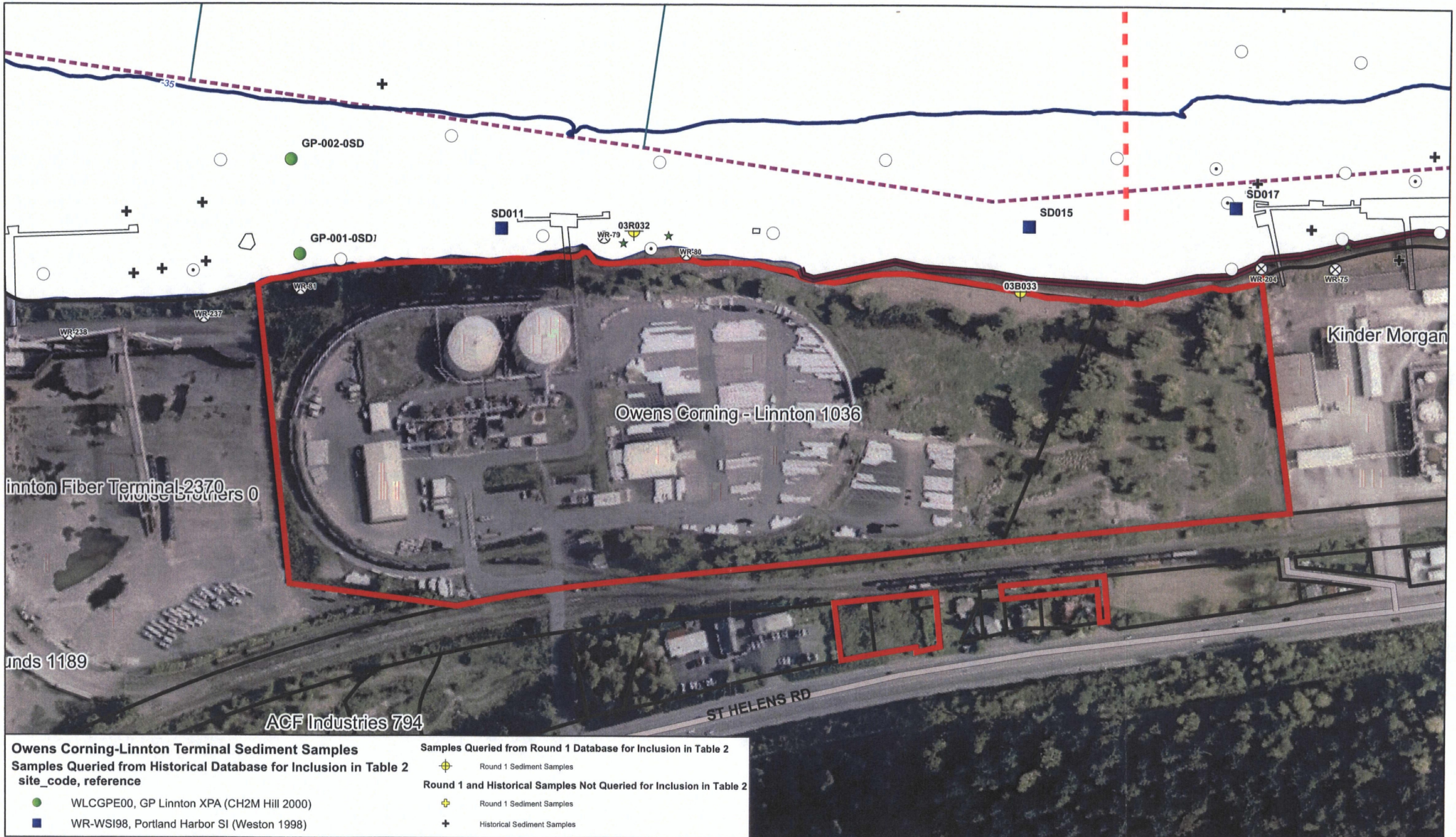
Tables:

Table 1. Potential Sources and Transport Pathways Assessment
Table 2. Queried Sediment Chemistry Data

Supplemental Figures:

Figure 3. Site Map (KJC 2000)
Figure 4. South Site Plan Showing Previous Sampling Locations (KJC 2000)
Figure 1. Site Sampling Locations (KJC 2001)
Exhibit A. DSL Waterway Lease Application Form – Owens Corning Lease Area (DSL 2000)

FIGURES



integral consulting inc.

LWG Lower Willamette Group

Map Document: (C:\GIS\Projects\Portland_Harbor\LWG-Map-Projects\Conseptual_Site_Model\Sample_Locations.mxd)
Plot Date: 03/08/2005

Areal Photo Date: October 2001.
Base Map features from Portland Metro's RLIS.

The City of Portland Outfall mapping information is based on available records; no warranty, expressed or implied, is provided as to the completeness or accuracy of the information. Current layer updated June 2004.

City Outfalls
City Outfalls (Abandoned)
Non-City Outfalls
Seep Photo Location (Not location of actual Seep)

Selected ECSI Site Property Boundary
-35ft. Contour (NAVD 88)
River Miles
Docks & In-water Structures
Navigation Channel

Human Use Areas
Dockside Worker
Recreational Beach Use
Transient

LWG Round 2 Proposed Sediment Samples
Surface Sample Only
Core & Surface Sample

0 100 200 400 Feet

DRAFT

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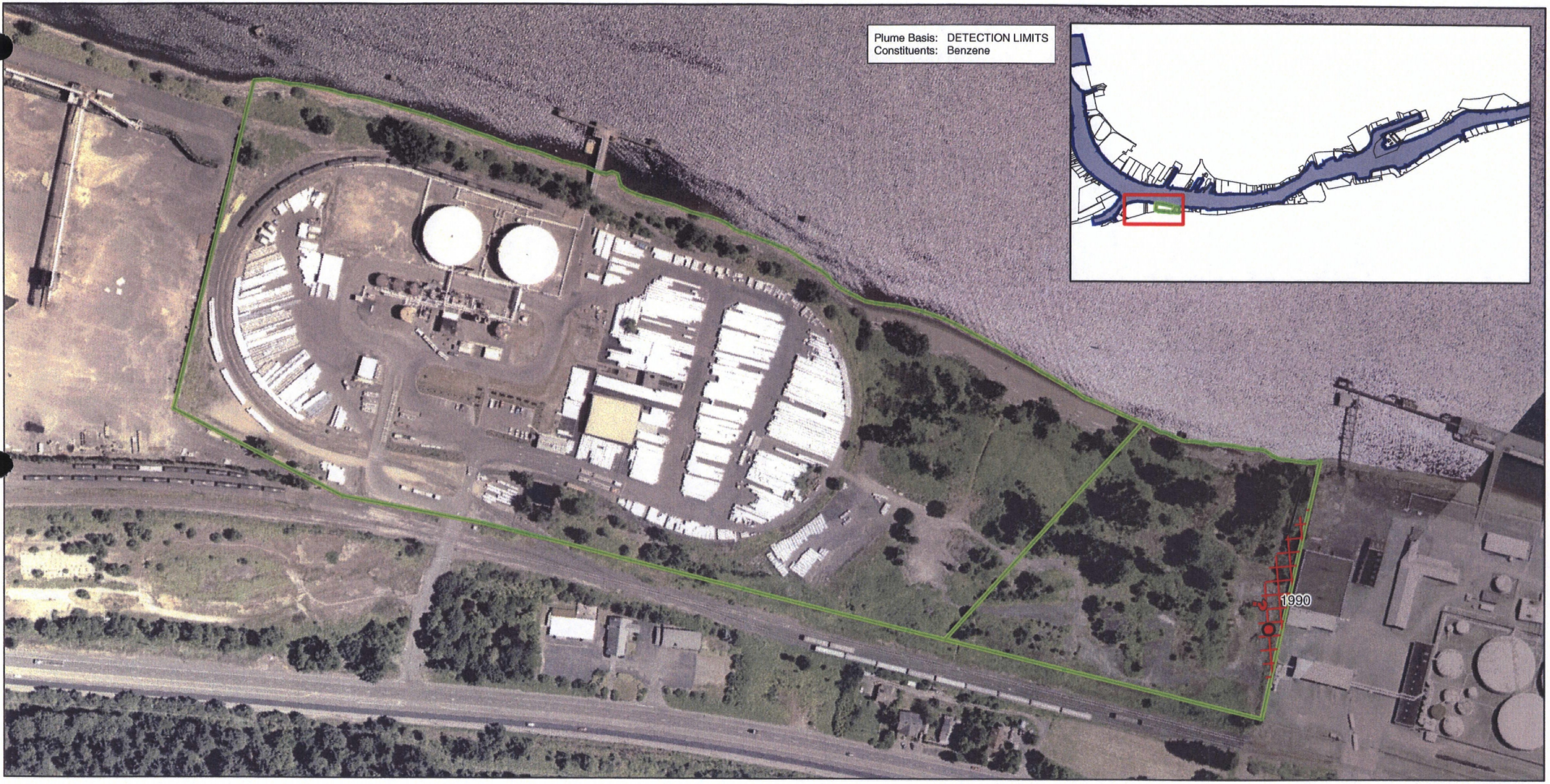
Figure 1-Site Features
Portland Harbor RI/FS
Conceptual Site Model
Owens Corning-Linnton Terminal
ECSI 1036



Groundwater Solutions Inc.

LWG
LOWER WILLAMETTE GROUP

0 150 300 Feet

FEATURE SOURCES:
Transportation, Water, Property, Zoning or Boundaries: Metro RLIS.
ECSI site locations were summarized in December, 2002
and January, 2003 from ODEQ ECSI files.

Map Creation Date: August 11, 2004

File Name: Fig2_OwensCorning_SummaryMap.mxd

N

LEGEND

Site Boundary

General Groundwater Flow

Maximum Detection Location

Contaminant Type

Petroleum related

Extent of Impacted Groundwater

For details, refer to plume interpretation table in CSM document.

Single or isolated detection of COI's. Extent or continuity of impacted groundwater between sample points is uncertain. Color based on contaminant type.

Estimated extent of impacted groundwater area. Color based on contaminant type.

Figure 2
Portland Harbor RI/FS
Owens Corning Linnton
Upland Groundwater Quality Overview

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TABLES

Owens Corning Linnton #1036

Table 1. Potential Sources and Transport Pathways Assessment

Last Updated: March 4, 2005

Potential Sources	Media Impacted					COIs																Potential Complete Pathway				
						TPH			VOCs																	
Description of Potential Source	Surface Soil	Subsurface Soil	Groundwater	Catch Basin Solids	River Sediment	Gasoline-Range	Diesel - Range	Heavier - Range	Petroleum-Related (e.g. BTEX)	VOCs	Chlorinated VOCs	SVOCs	PAHs	Phthalates	Phenolics	Metals	PCBs	Herbicides and Pesticides	Dioxins/Furans	Butyltins	Others - Pentachlorophenol	Overland Transport	Groundwater	Direct Discharge - Overwater	Direct Discharge - Storm/Wastewater	Riverbank Erosion
Upland Areas																										
Southern Portion																										
Pole barn storage area - historic releases	✓	✓			?		✓	✓					✓									?			?	?
Former wood processing area[2]	✓	✓											✓			✓					✓	?			?	
Former UST[2]	✓	✓					✓	✓					✓													
Northern Portion																										
Process area releases	✓			?	?								✓												?	
Overwater Areas																										
Historic releases during product unloading at dock					?		✓	✓					✓											✓		
Other Areas/Other Issues																										

Notes:

[1] All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

[2]The XPA (KJC 2001, 2002) sampling investigations eliminated the former wood treatment and UST areas as current upland sources to the river.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

Blank = Source, COI and historic and current pathways have been investigated and shown to be not present or incomplete.

UST	Underground storage tank
AST	Above-ground storage tank
TPH	Total petroleum hydrocarbons
VOCs	Volatile organic compounds
SVOCs	Semivolatile organic compounds
PAHs	Polycyclic aromatic hydrocarbons
BTEX	Benzene, toluene, ethylbenzene, and xylenes
PCBs	Polychorinated biphenols

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	Aroclor 1016 (ug/kg)	3	0	0						3.9 U	20 U	9.27	3.9 U	3.9 U
surface	Aroclor 1242 (ug/kg)	3	0	0						3.9 U	20 U	9.27	3.9 U	3.9 U
surface	Aroclor 1248 (ug/kg)	3	0	0						3.9 U	20 U	10	6.1 U	6.1 U
surface	Aroclor 1254 (ug/kg)	3	1	33.3	17	17	17	17	17	3.9 U	20 U	13.6	17	17
surface	Aroclor 1260 (ug/kg)	3	1	33.3	10	10	10	10	10	3.9 U	20 U	11.3	10	10
surface	Aroclor 1221 (ug/kg)	3	0	0						7.7 U	40 U	18.5	7.8 U	7.8 U
surface	Aroclor 1232 (ug/kg)	3	0	0						3.9 U	20 U	9.27	3.9 U	3.9 U
surface	Polychlorinated biphenyls (ug/kg)	3	1	33.3	27 A	27 A	27	27 A	27 A	7.8 UA	40 UA	24.9	27 A	27 A
surface	Butyltin ion (ug/kg)	1	0	0						6 U	6 U	6	6 U	6 U
surface	Dibutyltin ion (ug/kg)	1	0	0						6 U	6 U	6	6 U	6 U
surface	Tributyltin ion (ug/kg)	1	1	100	81	81	81	81	81	81	81	81	81	81
surface	Tetrabutyltin (ug/kg)	1	0	0						6 U	6 U	6	6 U	6 U
surface	Total solids (percent)	2	2	100	51.4	92.7	72.1	51.4	51.4	51.4	92.7	72.1	51.4	51.4
surface	Total organic carbon (percent)	7	7	100	0.19	5.98	2.23	1.8	2.54	0.19	5.98	2.23	1.8	2.54
surface	< 0.075 mm (percent)	2	2	100	59.5	77.9	68.7	59.5	59.5	59.5	77.9	68.7	59.5	59.5
surface	0.075 to 0.85 mm (percent)	2	2	100	22	39.5	30.8	22	22	22	39.5	30.8	22	22
surface	Gravel (percent)	4	4	100	0.22	0.91	0.688	0.76	0.86	0.22	0.91	0.688	0.76	0.86
surface	Sand (percent)	3	3	100	20.71	40.05	30.7	31.22	31.22	20.71	40.05	30.7	31.22	31.22
surface	Very coarse sand (percent)	2	2	100	1.13	1.21	1.17	1.13	1.13	1.13	1.21	1.17	1.13	1.13
surface	Coarse sand (percent)	2	2	100	1.66	14.7	8.18	1.66	1.66	1.66	14.7	8.18	1.66	1.66
surface	Medium sand (percent)	2	2	100	4.93	65.3	35.1	4.93	4.93	4.93	65.3	35.1	4.93	4.93
surface	Fine sand (percent)	2	2	100	12.6	14.2	13.4	12.6	12.6	12.6	14.2	13.4	12.6	12.6
surface	Very fine sand (percent)	2	2	100	1.81	31.1	16.5	1.81	1.81	1.81	31.1	16.5	1.81	1.81
surface	Fines (percent)	3	3	100	59.73	79.29	69	67.92	67.92	59.73	79.29	69	67.92	67.92
surface	Silt (percent)	3	3	100	50.93	70.01	58.8	55.56	55.56	50.93	70.01	58.8	55.56	55.56
surface	Coarse silt (percent)	2	2	100	2.09	16.8	9.45	2.09	2.09	2.09	16.8	9.45	2.09	2.09
surface	Medium silt (percent)	2	2	100	0.83	11	5.92	0.83	0.83	0.83	11	5.92	0.83	0.83
surface	Fine silt (percent)	2	2	100	0.83	7.21	4.02	0.83	0.83	0.83	7.21	4.02	0.83	0.83
surface	Very fine silt (percent)	2	2	100	0.15	3.99	2.07	0.15	0.15	0.15	3.99	2.07	0.15	0.15
surface	Clay (percent)	3	3	100	8.8	12.36	10.1	9.28	9.28	8.8	12.36	10.1	9.28	9.28
surface	8-9 Phi clay (percent)	2	2	100	0.07	2.64	1.36	0.07	0.07	0.07	2.64	1.36	0.07	0.07
surface	9-10 Phi clay (percent)	2	2	100	0.05	1.96	1.01	0.05	0.05	0.05	1.96	1.01	0.05	0.05
surface	>10 Phi clay (percent)	2	2	100	0.12	2.43	1.28	0.12	0.12	0.12	2.43	1.28	0.12	0.12
surface	Dalapon (ug/kg)	2	0	0						15 U	27 U	21	15 U	15 U
surface	Dicamba (ug/kg)	2	0	0						3 U	3.2 U	3.1	3 U	3 U
surface	MCPA (ug/kg)	2	0	0						3200 U	14000 U	8600	3200 U	3200 U
surface	Dichloroprop (ug/kg)	2	0	0						6.5 U	17 UJ	11.8	6.5 U	6.5 U
surface	2,4-D (ug/kg)	2	0	0						6.5 U	7.4 UJ	6.95	6.5 U	6.5 U
surface	Silvex (ug/kg)	2	0	0						4 UJ	19 U	11.5	4 UJ	4 UJ
surface	2,4,5-T (ug/kg)	2	0	0						1.9 U	28 U	15	1.9 U	1.9 U
surface	2,4-DB (ug/kg)	2	0	0						40 U	43 U	41.5	40 U	40 U
surface	Dinoseb (ug/kg)	2	0	0						3 U	3.2 U	3.1	3 U	3 U
surface	MCPP (ug/kg)	2	0	0						3000 U	10000 U	6500	3000 U	3000 U
surface	Aluminum (mg/kg)	7	7	100	14000	36900	29700	30800	36800	14000	36900	29700	30800	36800
surface	Antimony (mg/kg)	5	0	0						0.86 U	5 UJ	3.37	5 UJ	5 UJ

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	Arsenic (mg/kg)	7	5	71.4	4	10.1	6.86	5.6	9.6	4	10.1	6.33	5 U	9.6
surface	Cadmium (mg/kg)	7	5	71.4	0.06	0.4	0.228	0.2	0.3	0.06	0.99 U	0.427	0.3	0.86 U
surface	Chromium (mg/kg)	7	7	100	15 J	35.5	30.4	33.5	34.7	15 J	35.5	30.4	33.5	34.7
surface	Copper (mg/kg)	7	7	100	15.8	47.9	35.9	37.5	40	15.8	47.9	35.9	37.5	40
surface	Lead (mg/kg)	7	7	100	12	18.5	14.8	14	17.5	12	18.5	14.8	14	17.5
surface	Manganese (mg/kg)	5	5	100	452	686	594	583	679	452	686	594	583	679
surface	Mercury (mg/kg)	7	5	71.4	0.05 J	0.15	0.082	0.06 J	0.1	0.05 J	0.15	0.0757	0.06 J	0.1
surface	Nickel (mg/kg)	7	7	100	18 J	28	25.8	27	27.8	18 J	28	25.8	27	27.8
surface	Selenium (mg/kg)	7	3	42.9	7	11	9.67	11	11	0.2 UJ	11	4.47	0.91 U	11
surface	Silver (mg/kg)	7	4	57.1	0.04 J	0.7	0.535	0.7	0.7	0.02 UJ	2 U	0.837	0.7	1.7 U
surface	Thallium (mg/kg)	3	3	100	17	23	20.7	22	22	17	23	20.7	22	22
surface	Zinc (mg/kg)	7	7	100	62	151	103	97	118	62	151	103	97	118
surface	Barium (mg/kg)	5	5	100	156	182	172	175	176	156	182	172	175	176
surface	Beryllium (mg/kg)	5	5	100	0.6	0.8	0.67	0.6	0.75	0.6	0.8	0.67	0.6	0.75
surface	Calcium (mg/kg)	3	3	100	8020	9850	8670	8150	8150	8020	9850	8670	8150	8150
surface	Cobalt (mg/kg)	5	5	100	17.5 J	18.3	17.9	17.9 J	18 J	17.5 J	18.3	17.9	17.9 J	18 J
surface	Iron (mg/kg)	5	5	100	30200	40900	36800	39600	40400	30200	40900	36800	39600	40400
surface	Magnesium (mg/kg)	5	5	100	5780	6560	6330	6450	6510	5780	6560	6330	6450	6510
surface	Potassium (mg/kg)	3	3	100	1280	1340	1320	1330	1330	1280	1340	1320	1330	1330
surface	Sodium (mg/kg)	3	3	100	1140	1200	1160	1150	1150	1140	1200	1160	1150	1150
surface	Tin (mg/kg)	2	0	0						4.3 U	5 U	4.65	4.3 U	4.3 U
surface	Titanium (mg/kg)	3	3	100	943	1960	1290	955	955	943	1960	1290	955	955
surface	Vanadium (mg/kg)	5	5	100	78.5	99.5	90.9	97.5	97.6	78.5	99.5	90.9	97.5	97.6
surface	2-Methylnaphthalene (ug/kg)	5	3	60	26	140	68	38	38	19 U	140	48.6	26	38
surface	Acenaphthene (ug/kg)	7	6	85.7	30	120	63.2	48	99	19 U	120	56.9	48	99
surface	Acenaphthylene (ug/kg)	7	5	71.4	25	132	50.4	32	32	19 U	132	41.6	31	32
surface	Anthracene (ug/kg)	7	6	85.7	32	299	95.5	52	100	19 U	299	84.6	52	100
surface	Fluorene (ug/kg)	7	5	71.4	29	86	55.6	48	75	19 U	86	45.4	40	75
surface	Naphthalene (ug/kg)	7	6	85.7	28	270	135	75	270	19 U	270	118	75	270
surface	Phenanthrene (ug/kg)	7	6	85.7	150	1120	408	250	480	19 U	1120	353	250	480
surface	Low Molecular Weight PAH (ug/kg)	7	6	85.7	273 A	1995 A	790	507	1087 A	19 U	1995 A	680	507	1087 A
surface	Dibenz(a,h)anthracene (ug/kg)	7	5	71.4	23	74	44.2	42	44 M	1.9 U	74	34.7	38	44 M
surface	Benz(a)anthracene (ug/kg)	7	7	100	5.2	1050	266	170	210	5.2	1050	266	170	210
surface	Benzo(a)pyrene (ug/kg)	7	7	100	5.2	1180	317	211	280	5.2	1180	317	211	280
surface	Benzo(b)fluoranthene (ug/kg)	7	7	100	5.2	1190	298	180	252	5.2	1190	298	180	252
surface	Benzo(g,h,i)perylene (ug/kg)	7	7	100	8.9	1240	304	170	280	8.9	1240	304	170	280
surface	Benzo(k)fluoranthene (ug/kg)	7	7	100	5	333	154	140	230	5	333	154	140	230
surface	Chrysene (ug/kg)	7	7	100	8.7	645	231	210	240	8.7	645	231	210	240
surface	Fluoranthene (ug/kg)	7	6	85.7	240	1340	521	348	470	19 U	1340	450	348	470
surface	Indeno(1,2,3-cd)pyrene (ug/kg)	7	7	100	6.4	806	210	140	160	6.4	806	210	140	160
surface	Pyrene (ug/kg)	7	6	85.7	240	1740	632	420	560	19 U	1740	545	420	560
surface	Benzo(b+k)fluoranthene (ug/kg)	5	5	100	196 A	1523 A	568	360 A	430 A	196 A	1523 A	568	360 A	430 A
surface	High Molecular Weight PAH (ug/kg)	7	7	100	44.6	9598 A	2800	2148 A	2522 A	44.6	9598 A	2800	2148 A	2522 A
surface	Polycyclic Aromatic Hydrocarbons (ug/kg)	5	5	100	1401 A	11593 A	4320	2702 A	3609 A	1401 A	11593 A	4320	2702 A	3609 A
surface	C1-Dibenzothiophene (ug/kg)	2	1	50	93	93	93	93	93	21 U	93	57	21 U	21 U

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	C1-Chrysene (ug/kg)	2	2	100	70	119	94.5	70	70	70	119	94.5	70	70
surface	C1-Fluorene (ug/kg)	2	2	100	22	66	44	22	22	22	66	44	22	22
surface	C1-Naphthalene (ug/kg)	2	2	100	22	102	62	22	22	22	102	62	22	22
surface	C1-Fluoranthene/pyrene (ug/kg)	2	2	100	168	655	412	168	168	168	655	412	168	168
surface	C1-Phenanthrene/anthracene (ug/kg)	2	2	100	106	517	312	106	106	106	517	312	106	106
surface	C2-Dibenzothiophene (ug/kg)	2	2	100	42	161	102	42	42	42	161	102	42	42
surface	C2-Chrysene (ug/kg)	2	2	100	31	54	42.5	31	31	31	54	42.5	31	31
surface	C2-Fluorene (ug/kg)	2	2	100	22	113	67.5	22	22	22	113	67.5	22	22
surface	C2-Naphthalene (ug/kg)	2	2	100	41	171	106	41	41	41	171	106	41	41
surface	C2-Phenanthrene/anthracene (ug/kg)	2	2	100	100	403	252	100	100	100	403	252	100	100
surface	C3-Dibenzothiophene (ug/kg)	2	2	100	42	119	80.5	42	42	42	119	80.5	42	42
surface	C3-Chrysene (ug/kg)	2	2	100	21	25	23	21	21	21	25	23	21	21
surface	C3-Fluorene (ug/kg)	2	2	100	27	117	72	27	27	27	117	72	27	27
surface	C3-Naphthalene (ug/kg)	2	2	100	37	188	113	37	37	37	188	113	37	37
surface	C3-Phenanthrene/anthracene (ug/kg)	2	2	100	106	412	259	106	106	106	412	259	106	106
surface	C4-Dibenzothiophene (ug/kg)	2	2	100	24	33	28.5	24	24	24	33	28.5	24	24
surface	C4-Chrysene (ug/kg)	2	0	0						17 U	21 U	19	17 U	17 U
surface	C4-Fluorene (ug/kg)	2	1	50	66	66	66	66	66	21 U	66	43.5	21 U	21 U
surface	C4-Naphthalene (ug/kg)	2	2	100	23	174	98.5	23	23	23	174	98.5	23	23
surface	C4-Phenanthrene/anthracene (ug/kg)	2	2	100	61	93	77	61	61	61	93	77	61	61
surface	2,4'-DDD (ug/kg)	2	0	0						0.39 U	1.3 U	0.845	0.39 U	0.39 U
surface	2,4'-DDE (ug/kg)	2	0	0						0.39 U	2.7 U	1.55	0.39 U	0.39 U
surface	2,4'-DDT (ug/kg)	2	0	0						0.39 U	0.39 U	0.39	0.39 U	0.39 U
surface	4,4'-DDD (ug/kg)	3	2	66.7	4.7	7.3 J	6	4.7	4.7	0.39 U	7.3 J	4.13	4.7	4.7
surface	4,4'-DDE (ug/kg)	3	2	66.7	2.7	3.2	2.95	2.7	2.7	0.39 U	3.2	2.1	2.7	2.7
surface	4,4'-DDT (ug/kg)	3	1	33.3	15	15	15	15	15	0.39 U	15	5.86	2.2 U	2.2 U
surface	Total of 3 isomers: pp-DDT,-DDD,-DDE (ug/kg)	3	2	66.7	7.9	25 A	16.5	7.9	7.9	0.39 U	25 A	11.1	7.9	7.9
surface	Aldrin (ug/kg)	3	0	0						0.19 U	0.99 U	0.457	0.19 U	0.19 U
surface	alpha-Hexachlorocyclohexane (ug/kg)	3	0	0						0.19 U	0.99 UJ	0.457	0.19 U	0.19 U
surface	beta-Hexachlorocyclohexane (ug/kg)	3	0	0						0.19 UJ	0.99 U	0.57	0.53 U	0.53 U
surface	delta-Hexachlorocyclohexane (ug/kg)	3	0	0						0.19 U	2.5 UJ	0.96	0.19 U	0.19 U
surface	gamma-Hexachlorocyclohexane (ug/kg)	3	0	0						0.19 U	0.99 U	0.457	0.19 U	0.19 U
surface	cis-Chlordane (ug/kg)	3	0	0						0.19 U	0.99 U	0.477	0.25 U	0.25 U
surface	trans-Chlordane (ug/kg)	2	0	0						0.19 U	0.6 U	0.395	0.19 U	0.19 U
surface	Oxychlordane (ug/kg)	2	0	0						0.39 U	0.39 U	0.39	0.39 U	0.39 U
surface	cis-Nonachlor (ug/kg)	2	0	0						0.39 U	0.39 U	0.39	0.39 U	0.39 U
surface	trans-Nonachlor (ug/kg)	2	0	0						0.39 U	0.39 U	0.39	0.39 U	0.39 U
surface	Dieldrin (ug/kg)	3	0	0						0.39 U	2 U	1.11	0.95 U	0.95 U
surface	alpha-Endosulfan (ug/kg)	3	0	0						0.19 U	0.99 U	0.457	0.19 U	0.19 U
surface	beta-Endosulfan (ug/kg)	3	0	0						0.39 U	2 U	0.927	0.39 U	0.39 U
surface	Endosulfan sulfate (ug/kg)	3	0	0						0.39 U	2 U	0.927	0.39 U	0.39 U
surface	Endrin (ug/kg)	3	0	0						0.39 U	2 U	0.927	0.39 U	0.39 U
surface	Endrin aldehyde (ug/kg)	3	0	0						0.39 U	2 U	0.927	0.39 U	0.39 U
surface	Endrin ketone (ug/kg)	3	0	0						0.39 U	2 U	0.927	0.39 UJ	0.39 UJ
surface	Heptachlor (ug/kg)	3	0	0						0.19 U	0.99 U	0.457	0.19 U	0.19 U

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	Heptachlor epoxide (ug/kg)	3	0	0						0.19 U	0.99 U	0.457	0.19 U	0.19 U
surface	Methoxychlor (ug/kg)	3	0	0						1.9 U	9.9 U	4.57	1.9 U	1.9 U
surface	Mirex (ug/kg)	2	0	0						0.39 U	0.94 U	0.665	0.39 U	0.39 U
surface	Toxaphene (ug/kg)	3	0	0						19 U	99 U	45.7	19 U	19 U
surface	gamma-Chlordane (ug/kg)	1	0	0						0.99 U	0.99 U	0.99	0.99 U	0.99 U
surface	Diesel fuels (mg/kg)	2	2	100	154	160	157	154	154	154	160	157	154	154
surface	2,3,4,6-Tetrachlorophenol (ug/kg)	2	0	0						96 U	97 U	96.5	96 U	96 U
surface	2,4,5-Trichlorophenol (ug/kg)	7	0	0						17 U	100 U	75	96 U	99 U
surface	2,4,6-Trichlorophenol (ug/kg)	7	0	0						1.7 U	100 U	70.1	96 U	99 U
surface	2,4-Dichlorophenol (ug/kg)	5	0	0						57 U	60 U	58.4	58 U	59 U
surface	2,4-Dimethylphenol (ug/kg)	7	0	0						1.7 U	58 U	25.5	20 U	58 U
surface	2,4-Dinitrophenol (ug/kg)	5	0	0						190 UJ	200 UJ	194	190 U	200 UJ
surface	2-Chlorophenol (ug/kg)	7	0	0						17 U	21 U	19.3	19 U	20 U
surface	2-Methylphenol (ug/kg)	7	0	0						1.7 U	20 U	14.4	19 U	20 U
surface	2-Nitrophenol (ug/kg)	5	0	0						95 U	100 U	97.4	97 U	99 U
surface	4,6-Dinitro-2-methylphenol (ug/kg)	5	0	0						190 U	200 U	194	190 U	200 U
surface	4-Chloro-3-methylphenol (ug/kg)	7	0	0						17 U	40 U	33.4	39 U	40 U
surface	4-Methylphenol (ug/kg)	7	4	57.1	21	71	35.3	24	25	19 U	71	28.7	21	25
surface	4-Nitrophenol (ug/kg)	5	0	0						95 U	100 U	97.4	97 U	99 U
surface	Pentachlorophenol (ug/kg)	7	0	0						9.7 U	100 UJ	53	29 U	99 U
surface	Phenol (ug/kg)	7	2	28.6	58	98	78	58	58	19 U	98	41.9	39 U	58
surface	2,3,4,5-Tetrachlorophenol (ug/kg)	2	0	0						96 U	97 U	96.5	96 U	96 U
surface	2,3,5,6-Tetrachlorophenol (ug/kg)	2	0	0						96 U	97 U	96.5	96 U	96 U
surface	Dimethyl phthalate (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U
surface	Diethyl phthalate (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U
surface	Dibutyl phthalate (ug/kg)	5	0	0						19 UJ	20 UJ	19.4	19 U	20 UJ
surface	Butylbenzyl phthalate (ug/kg)	5	1	20	36	36	36	36	36	19 U	36	22.8	20 U	20 U
surface	Di-n-octyl phthalate (ug/kg)	5	1	20	21	21	21	21	21	19 U	21	19.6	19 U	20 U
surface	Bis(2-ethylhexyl) phthalate (ug/kg)	5	1	20	46	46	46	46	46	46	170 UJ	114	120 UJ	140 UJ
surface	Azobenzene (ug/kg)	2	0	0						19 U	19 U	19	19 U	19 U
surface	Bis(2-chloro-1-methylethyl) ether (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U
surface	2,4-Dinitrotoluene (ug/kg)	5	0	0						95 U	100 U	97.4	97 U	99 U
surface	2,6-Dinitrotoluene (ug/kg)	5	0	0						95 U	100 U	97.4	97 U	99 U
surface	2-Chloronaphthalene (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U
surface	2-Nitroaniline (ug/kg)	5	0	0						95 U	100 U	97.4	97 U	99 U
surface	3,3'-Dichlorobenzidine (ug/kg)	5	0	0						95 U	100 U	97.4	97 U	99 U
surface	3-Nitroaniline (ug/kg)	5	0	0						110 U	120 U	118	120 U	120 U
surface	4-Bromophenyl phenyl ether (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U
surface	4-Chloroaniline (ug/kg)	5	0	0						57 U	60 U	58.4	58 U	59 U
surface	4-Chlorophenyl phenyl ether (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U
surface	4-Nitroaniline (ug/kg)	5	0	0						95 UJ	100 U	97.4	97 U	99 UJ
surface	Aniline (ug/kg)	2	0	0						19 U	19 U	19	19 U	19 U
surface	Benzoic acid (ug/kg)	5	0	0						190 U	200 U	194	190 U	200 U
surface	Benzyl alcohol (ug/kg)	5	0	0						19 UJ	97 U	50.4	20 UJ	96 U
surface	Bis(2-chloroethoxy) methane (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	Bis(2-chloroethyl) ether (ug/kg)	5	0	0						38 U	40 U	39.2	39 U	40 U
surface	Carbazole (ug/kg)	5	2	40	20	26	23	20	20	1.9 U	26	17.4	20 UJ	20
surface	Dibenzofuran (ug/kg)	5	2	40	23	25	24	23	23	1.9 U	25	17.8	20 U	23
surface	Hexachlorobenzene (ug/kg)	5	0	0						0.19 U	20 U	11.9	19 U	20 U
surface	Hexachlorobutadiene (ug/kg)	5	0	0						0.19 U	20 U	11.9	19 U	20 U
surface	Hexachlorocyclopentadiene (ug/kg)	5	0	0						95 UJ	100 UJ	97.4	97 U	99 UJ
surface	Hexachloroethane (ug/kg)	5	0	0						1.9 U	20 U	13.3	19 U	20 U
surface	Isophorone (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U
surface	Nitrobenzene (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U
surface	N-Nitrosodimethylamine (ug/kg)	2	0	0						96 U	97 UJ	96.5	96 U	96 U
surface	N-Nitrosodipropylamine (ug/kg)	5	0	0						38 U	40 UJ	39.2	39 U	40 U
surface	N-Nitrosodiphenylamine (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U
surface	Dibenzothiophene (ug/kg)	2	1	50	151	151	151	151	151	21 U	151	86	21 U	21 U
surface	1,2-Dichlorobenzene (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U
surface	1,3-Dichlorobenzene (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U
surface	1,4-Dichlorobenzene (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U
surface	1,2,4-Trichlorobenzene (ug/kg)	5	0	0						19 U	20 U	19.4	19 U	20 U
porewater	Butyltin ion (ug/l)	1	0	0						0.06 U	0.06 U	0.06	0.06 U	0.06 U
porewater	Dibutyltin ion (ug/l)	1	0	0						0.06 U	0.06 U	0.06	0.06 U	0.06 U
porewater	Tributyltin ion (ug/l)	1	0	0						0.02 U	0.02 U	0.02	0.02 U	0.02 U
porewater	Tetrabutyltin (ug/l)	1	0	0						0.02 U	0.02 U	0.02	0.02 U	0.02 U
porewater	Aluminum (mg/l)	1	1	100	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
porewater	Antimony (mg/l)	1	0	0						0.05 U	0.05 U	0.05	0.05 U	0.05 U
porewater	Arsenic (mg/l)	1	1	100	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
porewater	Cadmium (mg/l)	1	0	0						0.002 U	0.002 U	0.002	0.002 U	0.002 U
porewater	Chromium (mg/l)	1	0	0						0.005 U	0.005 U	0.005	0.005 U	0.005 U
porewater	Copper (mg/l)	1	0	0						0.002 U	0.002 U	0.002	0.002 U	0.002 U
porewater	Lead (mg/l)	1	0	0						0.001 U	0.001 U	0.001	0.001 U	0.001 U
porewater	Manganese (mg/l)	1	1	100	5.94	5.94	5.94	5.94	5.94	5.94	5.94	5.94	5.94	5.94
porewater	Mercury (mg/l)	1	0	0						0.0001 U	0.0001 U	0.0001	0.0001 U	0.0001 U
porewater	Nickel (mg/l)	1	0	0						0.01 U	0.01 U	0.01	0.01 U	0.01 U
porewater	Selenium (mg/l)	1	0	0						0.001 U	0.001 U	0.001	0.001 U	0.001 U
porewater	Silver (mg/l)	1	0	0						0.0002 U	0.0002 U	0.0002	0.0002 U	0.0002 U
porewater	Thallium (mg/l)	1	0	0						0.001 U	0.001 U	0.001	0.001 U	0.001 U
porewater	Zinc (mg/l)	1	0	0						0.004 U	0.004 U	0.004	0.004 U	0.004 U
porewater	Barium (mg/l)	1	1	100	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094
porewater	Beryllium (mg/l)	1	0	0						0.001 U	0.001 U	0.001	0.001 U	0.001 U
porewater	Calcium (mg/l)	1	1	100	61.2	61.2	61.2	61.2	61.2	61.2	61.2	61.2	61.2	61.2
porewater	Cobalt (mg/l)	1	1	100	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
porewater	Iron (mg/l)	1	1	100	6.49	6.49	6.49	6.49	6.49	6.49	6.49	6.49	6.49	6.49
porewater	Magnesium (mg/l)	1	1	100	20	20	20	20	20	20	20	20	20	20
porewater	Potassium (mg/l)	1	1	100	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
porewater	Sodium (mg/l)	1	1	100	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
porewater	Vanadium (mg/l)	1	0	0						0.003 U	0.003 U	0.003	0.003 U	0.003 U

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
subsurface	Total organic carbon (percent)	1	1	100	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
subsurface	Gravel (percent)	1	1	100	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
subsurface	Sand (percent)	1	1	100	32.23	32.23	32.2	32.23	32.23	32.23	32.23	32.2	32.23	32.23
subsurface	Fines (percent)	1	1	100	67.22	67.22	67.2	67.22	67.22	67.22	67.22	67.2	67.22	67.22
subsurface	Silt (percent)	1	1	100	53.71	53.71	53.7	53.71	53.71	53.71	53.71	53.7	53.71	53.71
subsurface	Clay (percent)	1	1	100	13.51	13.51	13.5	13.51	13.51	13.51	13.51	13.5	13.51	13.51
subsurface	Aluminum (mg/kg)	1	1	100	37100	37100	37100	37100	37100	37100	37100	37100	37100	37100
subsurface	Antimony (mg/kg)	1	0	0						5 UJ	5 UJ	5	5 UJ	5 UJ
subsurface	Arsenic (mg/kg)	1	0	0						5 U	5 U	5	5 U	5 U
subsurface	Cadmium (mg/kg)	1	1	100	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
subsurface	Chromium (mg/kg)	1	1	100	35.2	35.2	35.2	35.2	35.2	35.2	35.2	35.2	35.2	35.2
subsurface	Copper (mg/kg)	1	1	100	40.9	40.9	40.9	40.9	40.9	40.9	40.9	40.9	40.9	40.9
subsurface	Lead (mg/kg)	1	1	100	27	27	27	27	27	27	27	27	27	27
subsurface	Manganese (mg/kg)	1	1	100	529	529	529	529	529	529	529	529	529	529
subsurface	Mercury (mg/kg)	1	1	100	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
subsurface	Nickel (mg/kg)	1	1	100	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
subsurface	Selenium (mg/kg)	1	1	100	9	9	9	9	9	9	9	9	9	9
subsurface	Silver (mg/kg)	1	1	100	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
subsurface	Thallium (mg/kg)	1	0	0						5 U	5 U	5	5 U	5 U
subsurface	Zinc (mg/kg)	1	1	100	125	125	125	125	125	125	125	125	125	125
subsurface	Barium (mg/kg)	1	1	100	175	175	175	175	175	175	175	175	175	175
subsurface	Beryllium (mg/kg)	1	1	100	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
subsurface	Calcium (mg/kg)	1	1	100	7490	7490	7490	7490	7490	7490	7490	7490	7490	7490
subsurface	Cobalt (mg/kg)	1	1	100	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2
subsurface	Iron (mg/kg)	1	1	100	40200	40200	40200	40200	40200	40200	40200	40200	40200	40200
subsurface	Magnesium (mg/kg)	1	1	100	6510	6510	6510	6510	6510	6510	6510	6510	6510	6510
subsurface	Potassium (mg/kg)	1	1	100	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330
subsurface	Sodium (mg/kg)	1	1	100	1060 J	1060 J	1060	1060 J	1060 J	1060 J	1060 J	1060	1060 J	1060 J
subsurface	Vanadium (mg/kg)	1	1	100	98.2	98.2	98.2	98.2	98.2	98.2	98.2	98.2	98.2	98.2
subsurface	2-Methylnaphthalene (ug/kg)	1	1	100	730	730	730	730	730	730	730	730	730	730
subsurface	Acenaphthene (ug/kg)	1	1	100	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
subsurface	Acenaphthylene (ug/kg)	1	1	100	220	220	220	220	220	220	220	220	220	220
subsurface	Anthracene (ug/kg)	1	1	100	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
subsurface	Fluorene (ug/kg)	1	1	100	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
subsurface	Naphthalene (ug/kg)	1	1	100	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
subsurface	Phenanthrene (ug/kg)	1	1	100	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000
subsurface	Low Molecular Weight PAH (ug/kg)	1	1	100	23720 A	23720 A	23700	23720 A	23720 A	23720 A	23720 A	23700	23720 A	23720 A
subsurface	Dibenz(a,h)anthracene (ug/kg)	1	1	100	680	680	680	680	680	680	680	680	680	680
subsurface	Benz(a)anthracene (ug/kg)	1	1	100	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400
subsurface	Benzo(a)pyrene (ug/kg)	1	1	100	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
subsurface	Benzo(b)fluoranthene (ug/kg)	1	1	100	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
subsurface	Benzo(g,h,i)perylene (ug/kg)	1	1	100	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
subsurface	Benzo(k)fluoranthene (ug/kg)	1	1	100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
subsurface	Chrysene (ug/kg)	1	1	100	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
subsurface	Fluoranthene (ug/kg)	1	1	100	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000

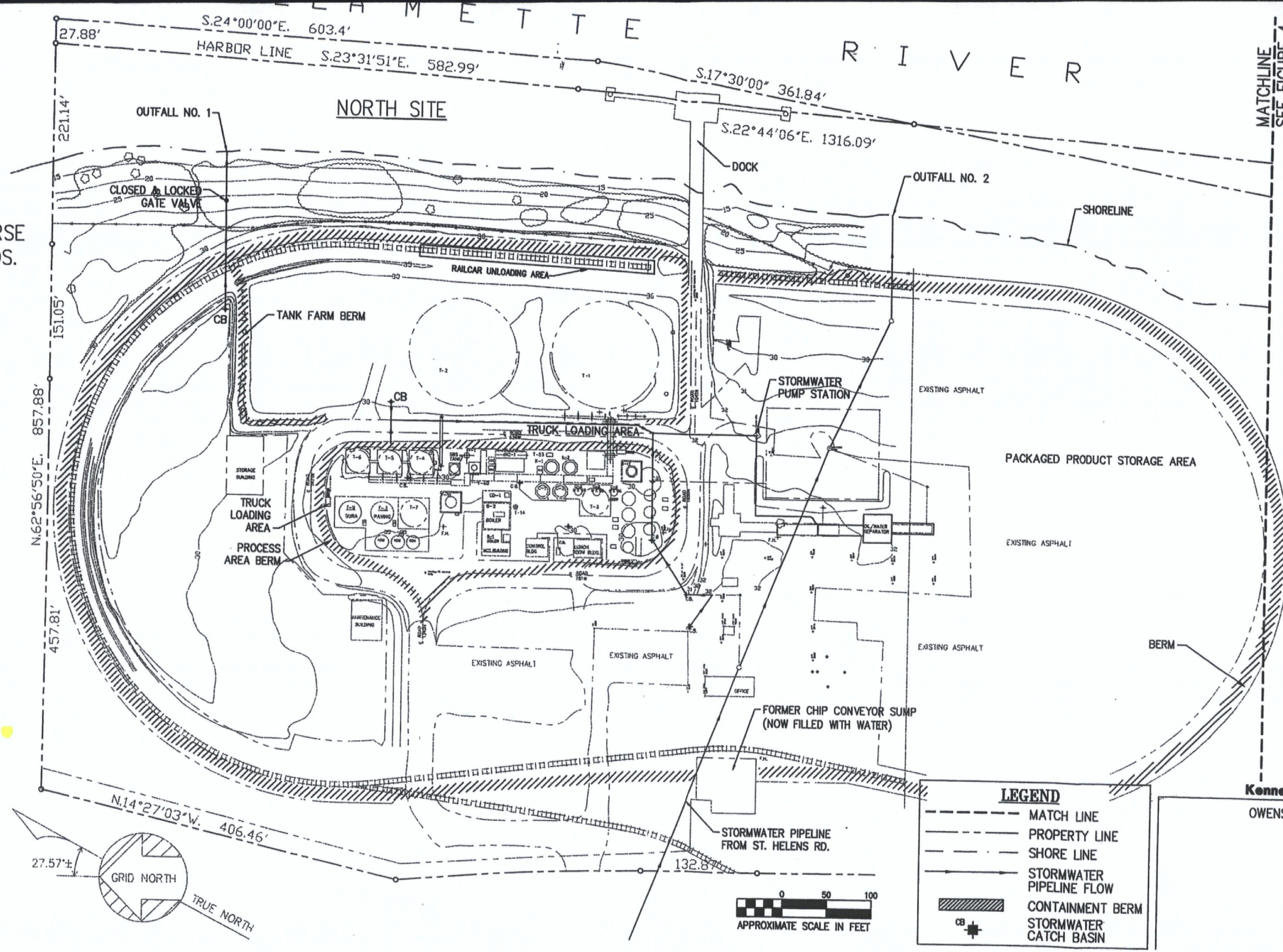
Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
subsurface	Indeno(1,2,3-cd)pyrene (ug/kg)	1	1	100	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
subsurface	Pyrene (ug/kg)	1	1	100	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000
subsurface	Benzo(b+k)fluoranthene (ug/kg)	1	1	100	3900 A	3900 A	3900	3900 A	3900 A	3900 A	3900 A	3900	3900 A	3900 A
subsurface	High Molecular Weight PAH (ug/kg)	1	1	100	45580 A	45580 A	45600	45580 A	45580 A	45580 A	45580 A	45600	45580 A	45580 A
subsurface	Polycyclic Aromatic Hydrocarbons (ug/kg)	1	1	100	69300 A	69300 A	69300	69300 A	69300 A	69300 A	69300 A	69300	69300 A	69300 A
subsurface	2,4,5-Trichlorophenol (ug/kg)	1	0	0						170 U	170 U	170	170 U	170 U
subsurface	2,4,6-Trichlorophenol (ug/kg)	1	0	0						170 U	170 U	170	170 U	170 U
subsurface	2,4-Dichlorophenol (ug/kg)	1	0	0						100 U	100 U	100	100 U	100 U
subsurface	2,4-Dimethylphenol (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	2,4-Dinitrophenol (ug/kg)	1	0	0						350 UJ	350 UJ	350	350 UJ	350 UJ
subsurface	2-Chlorophenol (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	2-Methylphenol (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	2-Nitrophenol (ug/kg)	1	0	0						170 U	170 U	170	170 U	170 U
subsurface	4,6-Dinitro-2-methylphenol (ug/kg)	1	0	0						350 UJ	350 UJ	350	350 UJ	350 UJ
subsurface	4-Chloro-3-methylphenol (ug/kg)	1	0	0						69 U	69 U	69	69 U	69 U
subsurface	4-Methylphenol (ug/kg)	1	1	100	280	280	280	280	280	280	280	280	280	280
subsurface	4-Nitrophenol (ug/kg)	1	0	0						170 U	170 U	170	170 U	170 U
subsurface	Pentachlorophenol (ug/kg)	1	0	0						170 UJ	170 UJ	170	170 UJ	170 UJ
subsurface	Phenol (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	Dimethyl phthalate (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	Diethyl phthalate (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	Dibutyl phthalate (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	Butylbenzyl phthalate (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	Di-n-octyl phthalate (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	Bis(2-ethylhexyl) phthalate (ug/kg)	1	1	100	120	120	120	120	120	120	120	120	120	120
subsurface	Bis(2-chloro-1-methylethyl) ether (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	2,4-Dinitrotoluene (ug/kg)	1	0	0						170 U	170 U	170	170 U	170 U
subsurface	2,6-Dinitrotoluene (ug/kg)	1	0	0						170 U	170 U	170	170 U	170 U
subsurface	2-Chloronaphthalene (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	2-Nitroaniline (ug/kg)	1	0	0						170 U	170 U	170	170 U	170 U
subsurface	3,3'-Dichlorobenzidine (ug/kg)	1	0	0						170 U	170 U	170	170 U	170 U
subsurface	3-Nitroaniline (ug/kg)	1	0	0						210 UJ	210 UJ	210	210 UJ	210 UJ
subsurface	4-Bromophenyl phenyl ether (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	4-Chloroaniline (ug/kg)	1	0	0						100 U	100 U	100	100 U	100 U
subsurface	4-Chlorophenyl phenyl ether (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	4-Nitroaniline (ug/kg)	1	0	0						170 UJ	170 UJ	170	170 UJ	170 UJ
subsurface	Benzoic acid (ug/kg)	1	0	0						350 U	350 U	350	350 U	350 U
subsurface	Benzyl alcohol (ug/kg)	1	0	0						35 UJ	35 UJ	35	35 UJ	35 UJ
subsurface	Bis(2-chloroethoxy) methane (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	Bis(2-chloroethyl) ether (ug/kg)	1	0	0						69 U	69 U	69	69 U	69 U
subsurface	Carbazole (ug/kg)	1	1	100	310 J	310 J	310	310 J	310 J	310 J	310 J	310	310 J	310 J
subsurface	Dibenzofuran (ug/kg)	1	1	100	220	220	220	220	220	220	220	220	220	220
subsurface	Hexachlorobenzene (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	Hexachlorobutadiene (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	Hexachlorocyclopentadiene (ug/kg)	1	0	0						170 UJ	170 UJ	170	170 UJ	170 UJ

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
subsurface	Hexachloroethane (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	Isophorone (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	Nitrobenzene (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	N-Nitrosodipropylamine (ug/kg)	1	0	0						69 U	69 U	69	69 U	69 U
subsurface	N-Nitrosodiphenylamine (ug/kg)	1	0	0						35 UJ	35 UJ	35	35 UJ	35 UJ
subsurface	1,2-Dichlorobenzene (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	1,3-Dichlorobenzene (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	1,4-Dichlorobenzene (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U
subsurface	1,2,4-Trichlorobenzene (ug/kg)	1	0	0						35 U	35 U	35	35 U	35 U

SUPPLEMENTAL FIGURES



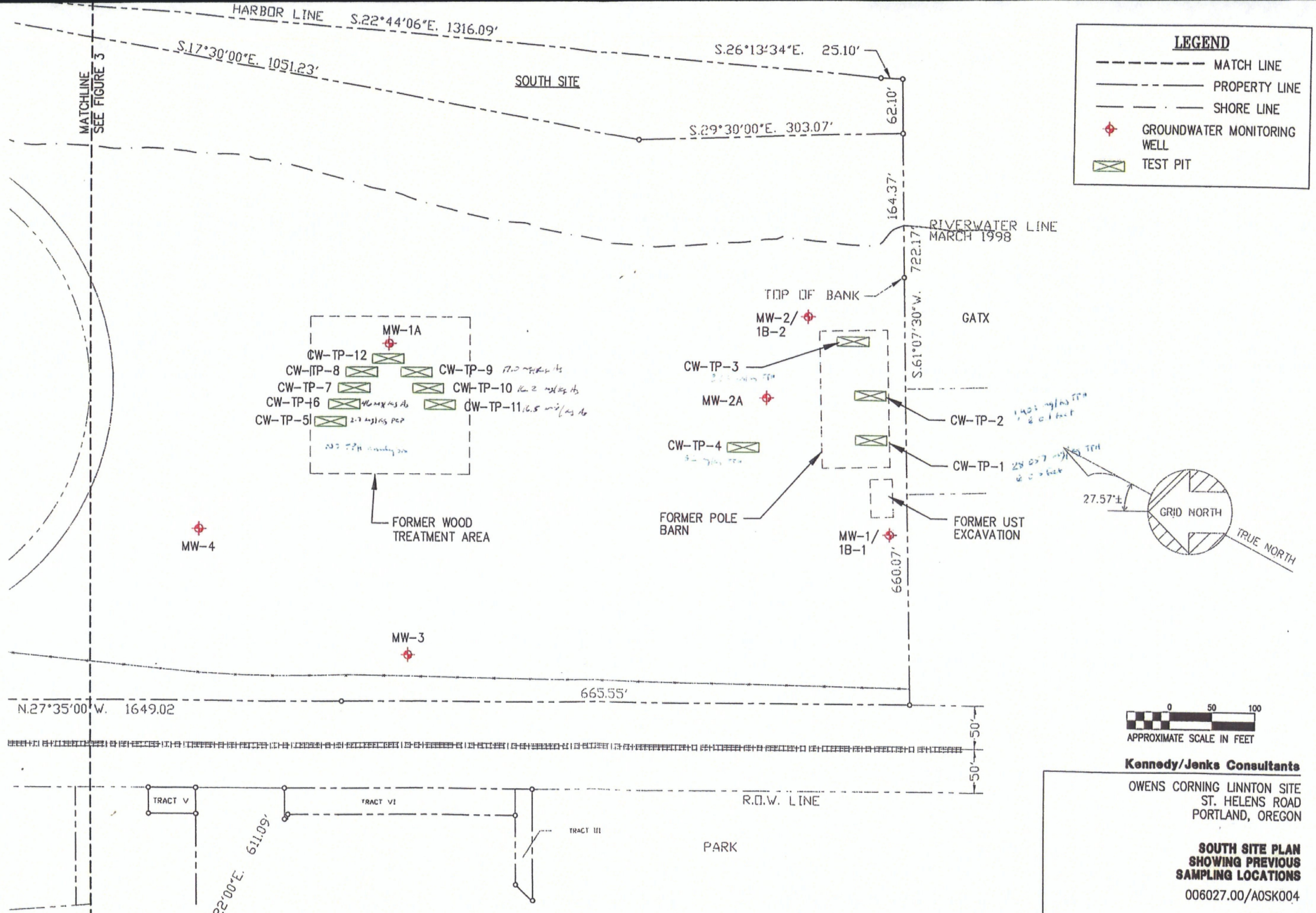
Kennedy/Jenks Consultants

OWENS CORNING LINNTON SITE
ST. HELENS ROAD
PORTLAND, OREGON

NORTH SITE PLAN

006027.00/A0SK003

FIGURE 3



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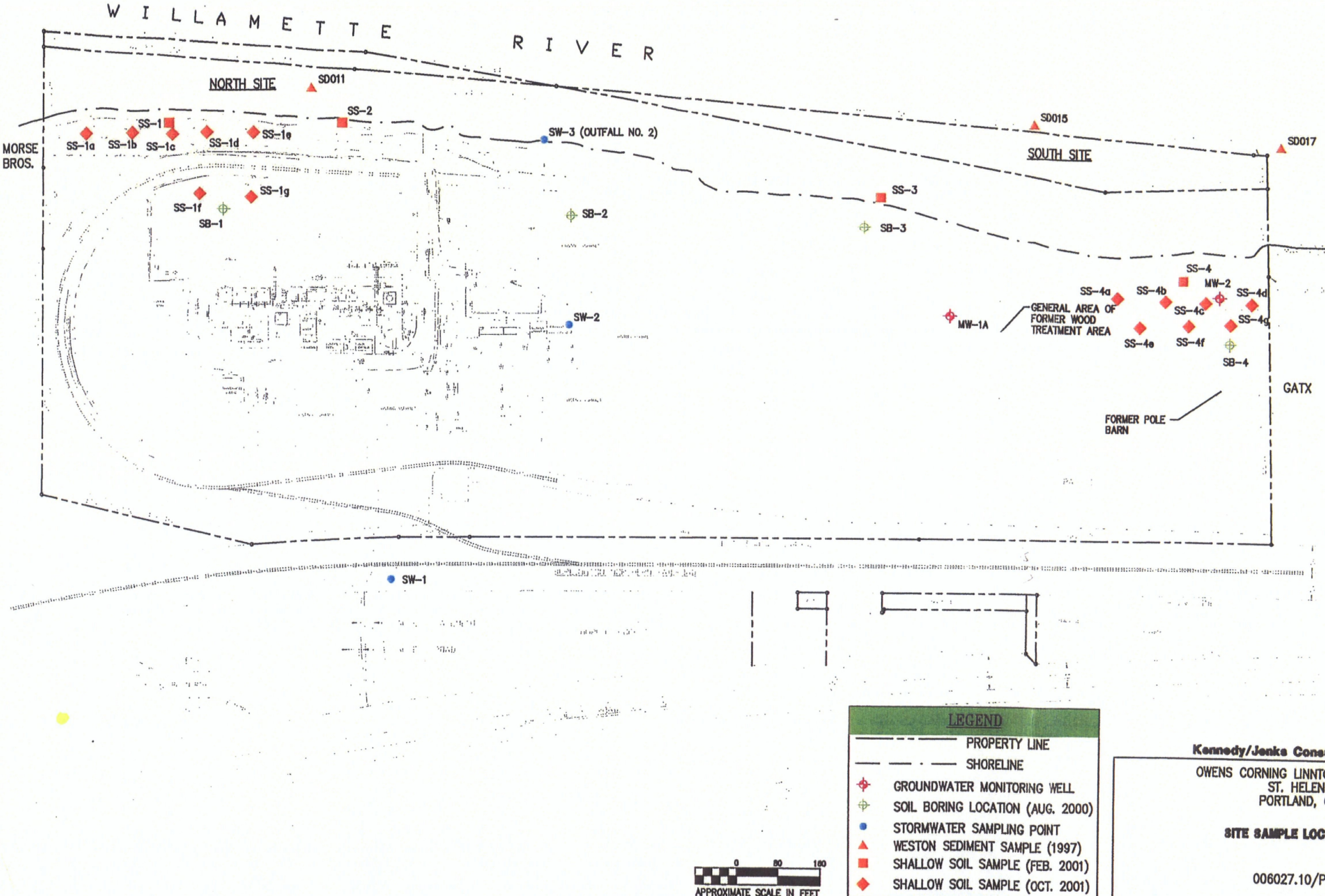
OWENS CORNING LINNTON SITE
ST. HELENS ROAD
PORTLAND, OREGON

SOUTH SITE PLAN SHOWING PREVIOUS SAMPLING LOCATIONS

006027.00/A0SK004

FIGURE 4



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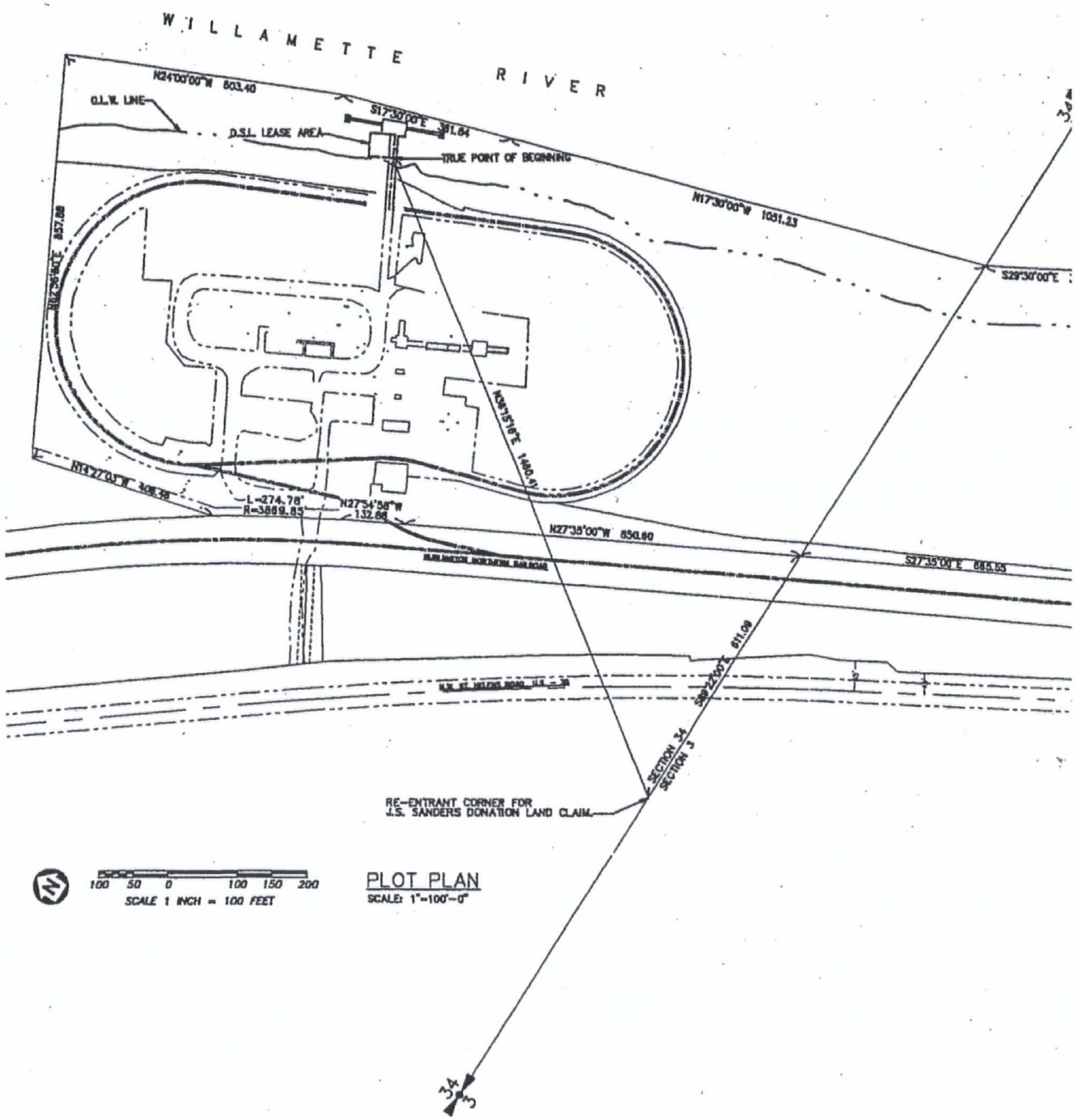
OWENS CORNING LINNTON SITE
ST. HELENS ROAD
PORTLAND, OREGON

SITE SAMPLE LOCATIONS

006027.10/P1SK001

FIGURE 1

ML 10364
Exhibit 'A'



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